REMARKS

Reconsideration of the application is requested.

Claim Rejections - 35 USC § 103

"Claims 13, 6-15 and 17-21 are rejected under 35 USC 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in combination with Houston (US Patent No. 6,261,866), Maurelli et al (US Patent No. 5,479,367) and Yamane et al (US Patent No. 6,337,249).

Applicant's admitted prior art (AAPA) discloses in figures 2 and 3 and related text a method of making a semiconductor device comprising the steps of performing a LOCOS operation on an epitaxial layer of a pre-doped N-type semiconductor substrate to define an active region have a predefined boundary (figure 3);

implanting a first dopant into the epitaxial layer within the active region to create a well of first type conductivity (figure 3, 6);

depositing a polysilicon layer over the active region, doping the polysilicon layer to create a poly semiconductor layer of a second type of conductivity, patterning the poly semiconductor layer to create a poly gate (figure 3, 1) over the first region and well;

performing an ion implant of the second type conductivity between the LOCOS regions and the poly gate to create first and second lightly doped regions (figure 3, 5 and 15), the first and second lightly doped regions being separated by a channel region beneath the poly gate;

depositing an oxide layer over the poly gate and active regions, etching the oxide layer to create side spacers (figure 3, 7 and 17) on each side of the poly gate and implanting a heavy dose of the second type of dopant between the LOCOS regions and the side spacers to create source and drain regions (figure 3, 4 and 14), the source and drain regions being separated by the channel region. AAPA further discloses that the first type of dopant is a P type dopant and the second type of dopant is an N type dopant (Specification, p. 8 second paragraph).

AAPA fails to expressly disclose a step of implanting the first dopant into the well to create a first region and a second region separated from the first region, the first and second regions being implanted across the boundary of the active region and directly spaced apart from each other across the active region and space apart from the center of the active region, and also fails to teach the use of masks during the heavy dose, light dose and first region implantation steps.

Applicant's Response

Applicant respectfully points out that the admitted prior art does not teach nor suggest "..patterning the poly semiconductor layer to create a poly gate (figure 3, 1) over the first region and well", it is only disclosed in Applicant's specification that "the patterning the poly semiconductor layer to create a poly gate (figure 3, 1) over the first region".

Claim Rejections - 35 USC § 103 Continued

Maurelli et al disclose in figures 1-9 and related text a method of implanting the first dopant into the well to create at least a first region and a second region separated from the first region, the first and second regions being implanted across the boundary of the active region and directly spaced apart from each other across the active region and space apart from the center of the active region (col. 2, line 51 to col. 3, line 24 and Figs. 1-9) and discloses using a photoresist (figure 5 and 6, 3 and 5) mask during the creation of the N+ region (figure 6,9) and first region (figure 5). Maurelli further discloses implanting the N type dopant so that th lightly doped region is not in contact with the first region (figure 3). It would have been obvious to combine the teaching of Maurelli with the method of AAPA in order to guarantee a very good performance in terms of writing speed and current absorption (col. 2, lines 8-16)."

Applicant's Response

Applicant disagrees with the above assertion about what Maurelli discloses. Maurelli does not disclose, teach or suggest "a method of implanting the first dopant into the well to create at least a first region and a second region separated from the first region, the first and second regions being implanted across the boundary of the active region and directly spaced apart from each other across the active region and space apart from the center of the active region " in (col. 2, line 51 to col. 3, line 24 and Figs. 1-9). Rather, he teaches how to make the channel region 4, which is not created in a well and the source and drain regions 7 and

8 neither of which are created in a well. Nowhere in the Maurelli reference does he teach a method of implanting the first dopant into the well to create at least a first region 8 of figure 8 and a second region 18 of figure 8. The second region is separated from the first region, the first and second regions being implanted across the boundary of the active region and directly spaced apart from each other across the active region and spaced apart from the center of the active region. The steps of creating the first and second regions 8 and 18 are in addition to the step of implanting a heavy dose of the second type of dopant between the LOCOS regions and the side spacers to create source and drain regions, the source and drain regions being separated by the first and second lightly doped regions and the channel region.

Thus, one of ordinary skill in the art would not be motivated to combined the cited references, and even if they were to combined them, the results would only be over lapping source and drain regions.

The rejection further stated: "Neither AAPA nor Maurelli disclose implanting the N type dopant so that the lightly doped regions are in contact with the first region. Yamane et al disclose in figures 1-15D and related text a method implanting the N type dopant so that the lightly doped regions (figure 2D, 15b) are in contact with the first region (figure 2D, 17). It would have been obvious to one of ordinary skill in the art ant the time of the invention to combine the teaching of Yamane with the combined method of AAPA and Maurelli in order to establish a threshold voltage at a desired value (col. 7, lines 20-55)."

Applicant's Response

Neither AAPA , Maurelli nor Yamane et al, teaches implanting the N type dopant so that the lightly doped regions are in contact with the first region. Applicant has previously discussed the reasons why one of ordinary skill in the art could not achieve Applicant's claimed invention with the combination of AAPA and Maurelli. Yamane et al. teaches in column 6 lines 29 through 34 "...a high-concentration P-type region 17 formed by implantation acceptor dopant (for example boron) is formed only in a proximity of a source region 15b, and is structured so that the high-concentration P-type region 17 is not contiguous with a drain region 15a." Thus, Applicant's claims would not be obvious to one of ordinary skill in the art from the combinations of cited references.

The rejection further stated: "Finally, none of the cited prior art teaches implanting the first and second region so that the two regions are separated and below the poly gate with an active region between the first and second region. Houston et at disclose in figures 1-3c a method of implanting the first and second regions so that the two regions are separated and below the poly gate with an active region between the first and second region (figures 2b and 2c). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Houston with the combined method of AAPA, Maurelli and Yamane in order to provide continued capacitive coupling of the gate of the body for a greater range of the gate voltage (col. 5, lines 30-35)."

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Applicant's Response

Houston teaches the formation of a source/drain regions 23 and 25 separated by a channel region 27. He does not teach, nor suggest "implanting the first and second region so that the two regions are separated and below the poly gate with an active region between the first and second region." and as such the combination of references would not have been obvious to one of ordinary skill in the art at the time the invention was made.

Applicant's Conclusion

The claims being in condition for allowance this action is requested.

Respectfully submitted,

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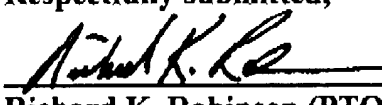

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